

REMARKS

The foregoing claim amendment amends claim 1, 3 and 10, cancels claims 4 and 9, and adds claims 11-14. Pending in the application are claims 1-3 and 5-8 and 10-14, of which claims 1, 2, 3 and 7 are independent. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Claim Amendments

Applicants amend claims 1, 3 and 10 to clarify the scope of claimed invention. In particular, claims 1 and 3 are amended to incorporate the subject matter recited in dependent claims 4 and 9, which are subsequently canceled. No new matter is added. Applicants submit that the claim amendments should be entered and considered.

Claim Rejections - 35 U.S.C. §112, First Paragraph

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In the forgoing claim amendments, Applicants amend claim 10, as suggested by the Examiner in the Office Action. In light of the foregoing claim amendments, Applicants request the Examiner reconsider and withdraw the rejection of claim 10 under 35 U.S.C. §112, first paragraph, and pass the claim to allowance.

Claim Rejections - 35 U.S.C. §112, Second Paragraph

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the forgoing claim amendments, Applicants amend claim 10 to address the issues raised by the Examiner in the Office Action. In light of the foregoing claim amendments, Applicants request the Examiner reconsider and withdraw the rejection of claim 10 under 35 U.S.C. §112, second paragraph, and pass the claim to allowance.

Rejections of Claims -35U.S.C. §102

Claims 1-9 are rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,366,821 (“Merritt”). Applicants respectfully traverse this rejection for the following reasons.

The claimed invention relates to a process (claims 1-2, and 7-9) and a system (claim 3-6) for controlling the flow amount and the pressure of a cathode gas (air) supplied to a fuel cell in the transition period of the fuel cell. The claimed invention utilizes a compressor and a pressure control valve to control the flow amount and the pressure of the cathode gas, respectively.

The claimed invention is provided to prevent the excessive pressure difference between the two poles in the fuel cell during the transition period and eliminate a time lag caused until the pressure of the cathode gas at the cathode inlet side reaches a target pressure of the cathode gas.

In particular, independent claims 1, 3, and 7 recite that the compressor changes the amount of the cathode gas supplied to the fuel cell, and then the pressure control valve *subsequently* regulates the pressure of the cathode gas to a target pressure by varying its opening *depending on the amount of the changed cathode gas*.

The Merritt reference discloses that the compressor (330) and the valve (180) control the pressure and the flow rate of the air, respectively. (*See* Merritt, Figures 3 and 4). The Examiner recognizes at page 5, lines 6-22 in the Office Action that the compressor (330) and the valve (180) control the pressure and the flow rate of the air, respectively, supplied to the fuel cell (10) in the Merritt reference. The Examiner, however, notes at page 6, lines 1-6 in the Office Action that the valve (180) of the Merritt reference changes the pressure of the air as well as the flow rate of the air, and the compressor (330) of the Merritt reference *inherently* controls the amount of air flow into the fuel cell.

The Merritt reference, however, does not disclose that the amount of the cathode gas supplied to the fuel cell is first changed, and then the pressure of the cathode gas is *subsequently* regulated to reach a target gas pressure depending on the amount of the changed cathode gas, as recited in claim 1, 3 and 7. If the amount of the cathode gas and the pressure of the cathode gas change at the same time, which is disclosed in the Merritt reference, then the pressure of the cathode gas decreases at the initial stage of the transition period due to the fact that the response speed of the compressor is slower than that of the valve.

In contrast, the claimed invention first changes the amount of the cathode gas supplied to the fuel cell, and then *subsequently* regulates the pressure of the cathode gas to a target pressure *depending on the amount of the changed cathode gas*. In the claimed invention, the pressure of the cathode gas is not decreased at the initial stage of the transition period. Instead, the pressure of the cathode gas is increased at the initial stage of the transition period in the claimed invention.

In light of the foregoing arguments and claim amendments, Applicants submit that the Merritt reference fails to disclose each and every element of claims 1, 3 and 7. Applicants therefore request the Examiner reconsider and withdraw the rejection of claims 1 and 3-9 under 35 U.S.C. §102(b), and pass the claims to allowance.

Additionally, Applicants submit that the Merritt reference fails to disclose that a flow amount feedback control step and a pressure feedback control step are stopped during the transition period of the fuel cell, as recited in claim 2. The Examiner notes that the Merritt reference discloses at column 12, lines 29-33 that the feedback control steps for controlling the flow amount and the pressure of the air are stopped in the transition period. Applicants respectfully disagree.

Merritt discloses at column 12, lines 29-33 that “[i]f the system is configured correctly, *the successive perturbations of the pressure control and the mass flow control will be smaller and smaller*, and a new state of operation at the new mass flow rate and the original pressure will

quickly be achieved (emphasis added).” In this portion of the disclosure, the Merritt reference does not disclose that a flow amount feedback control step and a pressure feedback control step are stopped during the transition period of the fuel cell. To the contrary, the Merritt reference requires a successive feedback control of the pressure and the mass flow because the Merritt discloses that *the successive perturbations of the pressure control and the mass flow control will be smaller and smaller.*

In light of the foregoing arguments, Applicants submit that the Merritt reference fails to disclose each and every element of claim 2. Applicants therefore request the Examiner reconsider and withdraw the rejection of claim 2 under 35 U.S.C. §102(b), and pass the claim to allowance.

New Claims

Applicants add new claims 11-14 to clarify the scope of claimed invention. New claims 11-14 depend upon claim 10, which subsequently depends upon claim 1. The new claims recite the detailed operation of the pressure control valve during the transition period. Since these limitations are not disclosed in the Merritt reference, Applicants submit that the new claims are also in condition for allowance.

Application No.: 09/915936
Group Art Unit: 1745

Docket No.: IIW-006RCE

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance. Applicant believes a \$1,240 fee is due with this statement and requests an extension of time herewith. However, if any further fee is due, please charge our Deposit Account No. 12-0080, under Order No. IIW-006 from which the undersigned is authorized to draw.

Dated: March 7, 2005

Respectfully submitted,

By 

Anthony A. Laurentano
Registration No.: 38,220
LAHIVE & COCKFIELD, LLP
28 State Street
Boston, Massachusetts 02109
(617) 227-7400
(617) 742-4214 (Fax)
Attorney/Agent For Applicant